**Amendments to the Drawings**

The attached sheet of drawings includes changes to FIG. 2. This sheet, which includes FIG. 2, replaces the original sheet including FIG. 2. In FIG. 2, the text in box 104 has been amended to cure a typographical error.

Attachment: Replacement Sheet

## Remarks/Arguments

Applicant thanks the Examiner for Office Action mailed June 20, 2007. The status of the application is as follows:

- Claim 1-8 are pending. Claims 1, 4, and 6-8 have been amended herein. Claims 9-20 have been added.
- Claims 4, 5 and 6 are objected to for depending on a rejected base claim.
- The specification is objected to for referencing the claims by claim number.
- The drawings are objected to for informalities.
- The claims are objected to for informalities.
- Claim 8 is rejected under 35 U.S.C. 101.
- Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph.
- Claims 1, 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burder et al. (US 20050111622 A1) in view of Weese et al. (US 20050226527 A1).
- Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Burder et al. in view of Weese et al. and further in view of Cahill (US 20040062342 A1).
- Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Burder et al. in view of Weese et al. and further in view of Cesmeli et al. (US 20040125908 A1).

The objections and rejections are discussed below.

### The Objection to Claims 4, 5, and 6

The Examiner is thanked for indicating that claim 4 and claims 5 and 6, which depend from claim 4, would be allowable if claim 4 were rewritten to overcome the rejection under 35 U.S.C. §112, second paragraph, set forth in the subject Office Action and to include all of the limitations of the base claims and any intervening claims. As discussed below, claim 4 has been amended to overcome the 35 U.S.C. §112, second

paragraph, rejection. Applicant reserves the right to rewrite claim 4 to include all of the limitations of the base claims and any intervening claims as indicated by the Examiner at a later time if desired.

**The Specification is Objected to for References the Claims**

The Office has objected to the specification for referencing the claims by claim number. The specification has been amended to remove the claim number references from the specification. As such, this objection should be withdrawn.

**The Objection to the Drawings**

The Office objects to the drawings for a minor informality – a typographical error. In particular, the Office objects to FIG. 2, reference numeral 104. More particularly, the Office notes that the text "$1_N$" should be "$I_N$". This objection should be withdrawn because the FIG. 2 has been accordingly amended to cure the typographical error.

**The Objection to Claims 1, 4, 6, and 7**

Claims 1, 4, 6 and 7 stand objected to for minor informalities.

In particular, the Office objects to claims 1 and 7 for not using the present participle in the method steps. Claims 1 and 7 have been accordingly amended herein. As such, this objection to claims 1 and 7 should be withdrawn.

The Office objects to claims 1 and 7, line 9, for lack of antecedent basis in the phrase "the far side." Claims 1 and 7, line 9, have been amended herein to cure the lack of antecedent basis, and, thus, this objection to claims 1 and 7 should be withdrawn.

The Office objects to claim 1, line 13, claim 4, lines 2, and claim 7, line 29, for phrase "with the help of" as awkward and narrative. Claims 1, 4 and 7 have been

amended herein to change this phrase to "based on." Applicant believes that this amendment overcomes the objection.

The Office objects to claim 1, line 24, for the phrase "used in this case" as awkward and narrative. Applicant has deleted this phrase from claim 1. Accordingly, this objection to claim 1 should be withdrawn.

The Office objects to claim 6, line 3, for the phrase "in which case" as awkward and narrative. Applicant has deleted this phrase from claim 6. Accordingly, this objection to claim 1 should be withdrawn.

The Office objects to claim 7, line 1, for the phrase "and including" as awkward and narrative. Applicant is unable to find this phrase in any of claims 1-8. As such, this objection is moot.

**The Rejection of Claim 8 under 35 U.S.C. §101**

Claim 8 stands rejected under 35 U.S.C. §101 as being directed to non-statutory subject matter. The Office states that computer programs embodied on a computer readable medium would be within a statutory category of invention. As such, claim 8 has been amended herein to embody the computer program on a computer readable medium. Accordingly, this rejection should be withdrawn.

**The Rejection of Claims 1-8 under 35 U.S.C. §112**

Claims 1-8 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In particular, the Office asserts that claim 1, lines 5-7, and claim 7, lines 21-32, describe relative motion between a source and object, and that this is confusing and indefinite since the axis of rotation should be defined by the relative rotation of the source and detector. Applicant traverses this rejection. As known in the relevant art, a

system may be configured so that the source rotates about an axis of rotation around an object in an examination region, which is a relative motion between the source and the object. Accordingly, claim 1 is not confusing and indefinite, and this rejection should be withdrawn.

The Office further asserts that claim 4, lines 2-3, is indefinite insofar as the limiting meanings of "motion-artifact metric" and "motion-artifact value." Applicant traverses this rejection. An applicant is entitled to be his/her own lexicographer, and where an explicit definition is provided by the applicant for a term, that definition will control interpretation of the term as it is used in the claim. (See MPEP §2111.1 IV). The terms "motion-artifact metric" and "motion-artifact value" are described in the paragraphs beginning on page 8, line 15, and ending on page 10, line 19. Therefore, this rejection should be withdrawn.

The Office further asserts that claim 7 includes the phrase "in particular" which renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. The Office cites to section 2173.05(d) of the MPEP ("Exemplary Claim Language") to support this rejection. This rejection should be withdrawn as claim 7 has been amended herein to remove this phrase.

The Office rejects claims 2-3, 5-6 and 8 by virtue of their dependencies on claims 1 and 7. The rejections of these claims should be withdrawn for at least the reasons provided above with respect to claims 1 and 7.

**The Rejection of Claims 1, 7 and 8 under 35 U.S.C. §103(a)**

Claims 1, 7 and 8 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Burder et al. in view of Weese et al. This rejection should be withdrawn because the combination of Burder et al. and Weese et al. does not teach or suggest all the limitations of the subject claims and, therefore, the Office has failed to establish a *prima facie* case of obvious with respect to the subject claims.

> To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, (CCPA 1974). "MPEP §2143.03.

**Independent claim 1** is directed toward a computer tomography method. The method includes, *inter alia*, e) reconstructing of a plurality of intermediate images of a region of an object, each intermediate image being reconstructed with measured values that were acquired while the object was in a different phase of movement, f) determining the phase of movement in which there was least movement of the object in the region by determining the intermediate image having the fewest motion artifacts in the region, and g) reconstructing a computer tomographic image of the region from measured values that were acquired while the object was in the phase of movement in which there was least movement of the object in the region, the reconstruction parameters differing from the reconstructions parameters used to reconstruct the intermediate images. **Independent claims 7 and 8** recite similar aspects. The Office asserts that the combination of Bruder et al. and Weese et al. teach the above claimed aspects. However, the combination of Bruder et al. and Weese et al. do not teach or suggest the above claimed aspects.

Bruder et al. is directed to a method for increasing the time resolution of a CT image. Bruder et al. states that the problem with CT images from a single tube system using Segmented Multiple Plane Reconstruction (SMPR) is that the time resolution is not sufficient to achieve sufficiently sharp images. (See page 1, paragraph [0007]). Bruder et al. further states that by simultaneously using multiple tubes to measure data during the rest phase of adjacent heart cycles and superimposing incomplete image segments generated therefrom, that a higher time resolution CT image of the rest phase can be created. (See page 1, paragraph [0009]). With respect to FIG. 1, Bruder et al. discloses a dual tube system and an EKG that records the electrical activity of the heart during a CT scan. (See page 3, paragraphs [0041] and [0042]). The EKG signal is used to retrospectively determine the rest phase of each heart cycle by working back from the R spike to determine the start of the rest phase. (See page 3, paragraph [0042], page 5, paragraph [0058] and FIG. 8). Bruder et al. discloses that spiral data from the rest phase of each cycle is used for display purposes. (See page 3, paragraph [0058]). Bruder et al.

further discloses that segment image stacks from a number of successive heart cycles are calculated, and intermediate/segment images resulting therefrom, from the same rest phase of the different heart cycles, are added together to increase the time resolution of the images. (See page 3, paragraph [0059]). Hence, Bruder et al. teaches adding segment images generated from data detected during the same heart phase of different heart cycles to create an increased time resolution image for the rest phase.

Weese et al. relates to a method for correcting motion artifact in CT images. Weese et al. discloses reconstructing a first image of an object (See page 1, paragraphs [0008]-[0009]) and at least two further images that represent two different states of motion of the object (See page 1, paragraph [0010]). The two further images are acquired during a generally short acquisition time to reduce motion artifact. (See page 1, paragraph [0010]). A motion model that characterizes the two different states of motion is then determined. (See page 1, paragraph [0012]). The first image can then be motion corrected based on the motion model. For example, the first can be motion correct by: forming an intermediate image based on the motion model and the two further images, and forming a combination image from the first image and the intermediate image (See page 1, paragraphs [0013]-[0016]); forming an intermediate image based on the motion model and the two further images, and reconstructing the first image based on the projections of the object and the intermediate image (See page 2, paragraphs [0023]-[0026]), and focusing the first image by means of the motion model. (See page 2, paragraphs [0020]-[0022]). Hence, Weese et al. teaches correcting motion artifact in an image by acquiring additional images from additional data that is acquired during a short acquisition time to reduce motion and generating a motion corrected image by combining the data of the first image and the additional images.

In the subject Office Action, the Office asserts that Bruder et al. teaches step e) of the subject claim. **Step e)** recites ***reconstructing of a plurality of intermediate images*** of a region of an object, ***each intermediate image being reconstructed with measured values that were acquired while the object was in a different phase of movement.*** As discussed above, Bruder et al. determines the rest phase of each heart cycle based on the

R spike, and generates intermediate images from data corresponding to the rest phase of different heart cycles. Thus, Bruder et al. generates intermediate images from the same phase – the rest phase. Bruder et al. does not contemplate generating intermediate images from data from different phases, as recited in claim 1.

The Office further asserts that the combination of Bruder et al. and Weese et al. teaches step f) of the subject claim. **Step f)** claim recites ***determining the phase*** of movement in which there was least movement of the object in the region, ***by determining the intermediate image*** [from the intermediate images reconstructed with measured values that were acquired while the object was in different phases] ***having the fewest motion artifacts*** in the region. As discussed above, Bruder et al. discloses determining the rest phase of the heart cycle based on the R spike in an EKG signal simultaneously acquired with the projection data, and Weese et al. discloses reconstructing additional images from data acquired during a generally short acquisition time so as to reduce motion artifact in the additional images. As such, neither Bruder et al., Weese et al., nor the combination thereof teach or suggest determining the phase of movement in which there was least movement of the object in the region by determining the intermediate image having the fewest motion artifacts in the region as recited in claim 1.

The Office further asserts that Bruder et al. teaches step g) of the subject claim. **Step g)** recites ***reconstructing a computer tomographic image*** of the region ***from measured values that were acquired while the object was in the phase of movement in which there was least movement*** of the object in the region, the reconstruction parameters differing from the reconstructions parameters used to reconstruct the intermediate images. As discussed above, Bruder et al. teaches adding intermediate images (not reconstructing measured values) together to produce a higher time resolution image. Moreover, since Bruder et al. does not reconstruct data to generate the high time resolution image, Bruder et al. cannot teach or suggest reconstructing the high time resolution images using different reconstruction parameters than those used to reconstruct the intermediate images.

From the above, it is readily apparent that the combination of Bruder et al. and Weese et al. does not teach or suggest claim 1. Accordingly, this rejection of claim 1 and the rejections to claims 7 and 8 should be withdrawn.

**The Rejection of Claim 2 under 35 U.S.C. §103(a)**

Claim 2 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Burder et al. in view of Weese et al. and further in view of Cahill. Claim 2 depends from claim 1 and is allowable at least by virtue of this dependency.

**The Rejection of Claim 3 under 35 U.S.C. §103(a)**

Claim 3 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Burder et al. in view of Weese et al. and further in view of Cesmeli et al. Claim 3 depends from claim 1 and is allowable at least by virtue of this dependency.

**New Claims 9-20**

Claims 9-20 have been added to emphasize various aspects. No new matter has been added. Entry and allowance of these claims is kindly requested.

**Conclusion**

In view of the foregoing, it is submitted that the pending claims distinguish patentably and non-obviously over the prior art of record. An early indication of allowability is earnestly solicited.

Respectfully submitted,

DRIGGS, HOGG & FRY CO., L.P.A.

Anthony M. Del Zoppo, III Reg. No. 51,606
Driggs, Hogg & Fry Co., L.P.A.
38500 Chardon Road
Willoughby Hills, Ohio 44094
Phone: 1.440.391.5100
Fax: 1.440.391.5101

Direct all correspondence to:
Thomas M. Lundin, Registration No. 48,979
Philips Intellectual Property & Standards
595 Miner Road
Cleveland, Ohio 44143
Phone: 440.483.4281
Fax: 440.483.2452